California Monthly Climate Summary
April 2011

Weather Highlights

April 2011 was a dry month for California for precipitation and a cooler than average month for temperature. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 52.0°F which is 0.6°F lower than the long-term average of 52.6°F. With a statewide average of 0.76 inches, precipitation in April was 46% of the long term average.

April started off with warm dry conditions across the state. The latter part of the first week saw a weak cold front pass through dropping temperatures considerably. The cool conditions persisted into the second week of April with a cold system dropping down into the state. Precipitation occurred in the northern part of the state and windy conditions were present in the south. The cold nature of the storm led to widespread thunderstorm activity with hail and an EF0 tornado in the Delta. High pressure started to build in the third week, but was interrupted by another cold system that brought more rain and snow to northern California. High pressure built in behind this system bringing temperatures up past normal. Daytime highs in the southeast desert region surpassed the 90°F mark. During the fourth week a long-wave trough parked offshore of the State with multiple short-wave systems spinning ashore. Rainfall fell as far south as the northern San Joaquin Valley. Mountain showers persisted through the week and temperature were kept slightly below normal. April ended with conditions warming and drying as high pressure started to build over the State.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 69 temperature records tied or broken and 1 precipitation record tied or broken for the month. Of the 69 temperature records set, 30 were for new high minimum temperatures. Records were set over 17 days of the month. Needles broke its record for earliest triple digit high temperature on April1st with a reading of 100°F. The previous earliest triple digit reading was 104°F on April 4th, 1961. Laguna Beach set a new high minimum temperature record on April 1st with a reading of 62°F. The old record was 59°F set back in 1934. On April 9th the Palmdale Airport tied a 1933 low minimum temperature record with a reading of 28°F. On April 28th Oceanside Harbor tied a 1918 high minimum temperature record with 58°F.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 224 stations recorded a minimum temperature below freezing in April while seven stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in April was well below normal across most of the state. For the California Climate Tracker Regions only the North Lohantan region was near normal. For the CDEC precipitation gages for April 2011, the largest amount of precipitation recorded was at Gasquet Ranger Station on the North Coast with 10.25 inches. This is 158% of the average precipitation for this station for April. At the other end of the spectrum, 9 stations recorded no precipitation for the month. For the CIMIS network, Alturas in Modoc County topped the precipitation charts with 2.51 inches for the month and 12 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network. This is normally not an issue in the winter.

The 8-Station Index for northern California precipitation recorded 3.4 inches in April with 16 days showing precipitation. On average, 3.5 inches of precipitation is recorded for the 8-Station index in April. Statewide, the average precipitation for April was 64.7% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

April 2011 continues California's third year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns in participating states. A map from April 25, 2011 is shown at the end of the document. As of the end of April 2011, California has 783 volunteers signed up spanning 53 of California's 58 counties. The county with the most volunteers at the end of March is Sonoma with 88 volunteers. For the month of April 9,425 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in April was in Humboldt County with 2.00 inches recorded on 4/17/11. Five hail reports were recorded from four counties. The largest reported hail stones were pea sized in San Diego and Kings County. Seventy-five snow reports were included with the precipitation reports with an 8-inch depth being the largest new snow total from Placer County on the 7th. The largest total snow depth reported was 99 inches reported at 2 sites with one in Placer County and one in Nevada County. Note that 99 inches is the largest number that the observer can enter into the database. In the notes section the Placer County observer notes that over 134 inches of snow depth was present on 5/1/2011. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

As of the end of April, the snow pillow sensors show the statewide snowpack to be190% of average for the date and 150% of the April 1st average peak with a total of 43 inches of snow water equivalent. The Northern Region (from the Trinity to the Feather and Truckee Basins) shows 46 inches of snow water equivalent which is

219% of average to date and 160% of the April 1st peak. The Central Region (the Yuba Basin to the Merced/Walker Basins) shows 45 inches of snow water equivalent which is 178% of average to date and 146% of the April 1st peak. The Southern Region (the San Joaquin Basin to the Kern Basin) shows 38 inches of snow water equivalent which is 176% of average to date and 141% of the April 1st peak. Water year 2011 has begun for the water supply index categories. Water year 2010 resulted in a below normal category for the Sacramento Basin and above normal category for the San Joaquin Basin for the Water Supply Index. The end-of-April Water Supply Index forecast for WY 2011 is wet for the Sacramento Basin and wet for the San Joaquin Basin. Water supply information for California can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

The maps for California for March 29, 2011 and April 26, 2011 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the April 26th depiction, California is depicted as drought free. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for May through July from NOAA depicts California continuing to be drought free. This forecast is based primarily on climatology and forecast models. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.
The California Nevada River Forecast Center has begun producing some drought monitoring tools for California. These tools look at the frequency associated with precipitation deficits for the Northern California Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. These tools can be found at http://www.cnrfc.noaa.gov/climate.php. For March, the Eight Station Index is in drought free conditions for a 12-month and 24 month period. The Five Station Index is also drought free for both periods. All reservoirs have above average storage for this time of year.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is being classified as a fading La Niña pattern. Equatorial sea surface temperature anomalies for the tropical Pacific have been negative with values of -0.5°C in the Niño 3.4 at the end of April. The February through April 3-month running mean of the Ocean Niño Index (ONI) is -0.9. This is the ninth consecutive ONI value to fall below the -0.5 threshold. Five consecutive ONI

values need to be below the threshold for conditions to be classified as a La Niña event. Most forecast models have the tropical sea surface temperatures moving to ENSO neutral conditions, but split on above or below mean conditions by the end of 2011. More information can be found at the Climate Prediction Center's web site: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ Updates are posted weekly. The latest three month outlook (May through July) from NOAA indicates increased chances of above normal temperatures for the southeastern part of the state and equal chances of above normal or below normal temperature for the rest of the state. For precipitation, equal chances of above or below normal conditions are forecast for the entire state. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

April 2011 continued winter crop harvests, new crop development, and preparations for spring plantings. Winter wheat, barley and oats began to be harvested. Alfalfa cutting was delayed due to rains. Rye, barley and other forage crops continued development. Rice field preparation continued. Sunflower seed planting began in the Sacramento Valley. Cotton, corn and bean fields were planted as field conditions allowed. The almond bloom completed and preparations for walnut and pistachio blooms were made. Bud break began to occur on grape vines in the Napa Valley. Citrus harvest continued with lemons, grapefruit, Valencia oranges, and mandarins being picked. San Joaquin Valley citrus growers began preparations for the upcoming bloom. Vegetable crops were growing well in Kern County while asparagus and spring lettuce harvest began in Fresno County. Tomato, pepper, carrots, garlic, and onions were growing well. Rainfall was causing problems with planting of squash, cucumbers, peppers, and eggplant in Tulare County. Non-irrigated pasture and rangeland were in very good to excellent condition. Beehives were moved from almond orchards to stone fruit and citrus orchards. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 106°F (Buttercup, Colorado River Desert)
Low Temperature – -16°F (Horse Meadow, San Joaquin)
High Precipitation – 10.25 inches (Gasquet Ranger Station, North Coast)
Low Precipitation – 0.0 inches (9 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 97.1 ^{0}F (Westmorland North, Imperial County)
Low Average Minimum Temperature – 26.3 ^{0}F (Tulelake FS, Siskiyou County)
High Precipitation – 2.51 inches (Alturas, Modoc County)*
Low Precipitation – 0 inches (12 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Apr	Oct-Apr	Stations	Apr	Oct-Apr	Apr	Oct-Apr
North Coast	0.27	5	5	5	17	14	12	108.5%	116%
SF Bay	0.03	2	2	2	6	3	3	32.6%	122%
Central Coast	0.06	3	3	3	11	8	8	15.3%	134%
South Coast	0.06	3	3	3	14	13	10	20.2%	138%
Sacramento River	0.26	5	5	5	42	34	32	73.8%	135%
San Joaquin River	0.12	6	6	6	24	23	23	35.6%	145%
Tulare Lake	0.07	5	5	5	28	27	27	40.1%	150%
North Lahontan	0.04	3	3	3	13	11	9	116.8%	151%
South Lahontan	0.06	3	3	3	15	13	12	21.0%	160%
Colorado River	0.03	1	1	1	6	5	4	3.6%	113%
Statewide Weighted Average	1	36	36	36	176	151	140	64.7%	133%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	22	24.8	44.0	72.9
SF Bay	8	33.6	50.9	76.9
Central Coast	13	29.5	52.8	84.7
South Coast	52	30.8	56.6	87.6
Sacramento	77	23.4	45.5	74.6
San Joaquin	45	17.3	43.7	75.0
Tulare Lake	17	13.1	42.2	72.1
North Lahontan	26	9.0	35.5	63.6
South Lahontan	16	10.6	42.6	72.1
Colorado River Desert	8	38.1	68.4	97.6
Statewide Weighted Average	284	22.5	46.0	75.6

U.S. Drought Monitor

March 29, 2011
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	99.94	0.06	0.00	0.00	0.00	0.00
Last Week (03/22/2011 map)	96.87	3.13	0.00	0.00	0.00	0.00
3 Months Ago (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	85.44	14.56	8.08	0.24	0.00	0.00
One Year Ago (03/23/2010 map)	64.29	35.71	9.91	7.10	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, March 31, 2011
Eric Luebehusen, United States Department of Agriculture

U.S. Drought Monitor

April 26, 2011
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	99.99	0.01	0.00	0.00	0.00	0.00
Last Week (04/19/2011 map)	99.99	0.01	0.00	0.00	0.00	0.00
3 Months Ago (01/25/2011 map)	99.94	0.06	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	85.44	14.56	8.08	0.24	0.00	0.00
One Year Ago (04/20/2010 map)	67.61	32.39	9.89	7.10	0.00	0.00

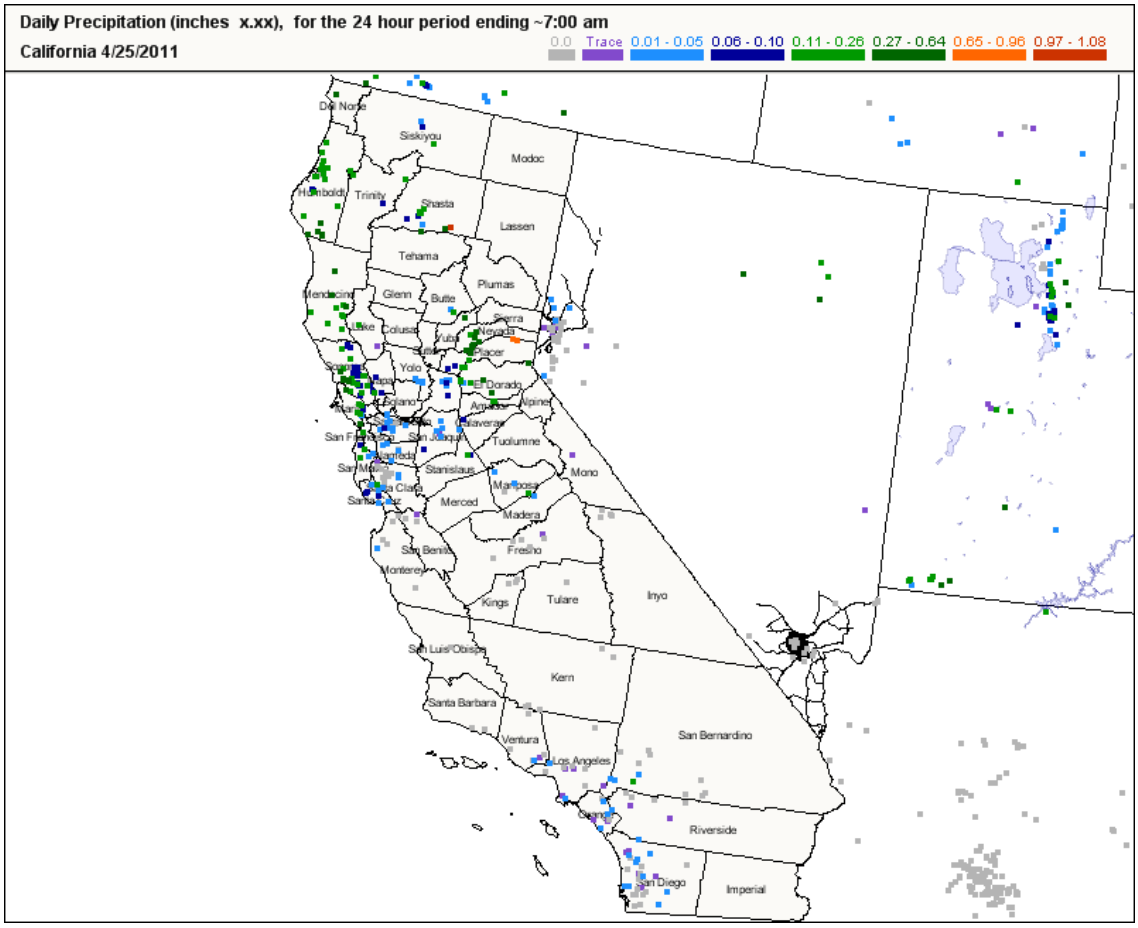
Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, April 28, 2011
Michael Brewer, National Climatic Data Center NOAA


Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
California 4/25/2011
0.0
Trace
0.01 - 0.05
0.06 - 0.10
0.11 - 0.26
0.27 - 0.64
0.65 - 0.96
0.97 - 1.08
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Mendocino
Glenn
Butte
Sierra
Nevada
Lake
Colusa
Yuba
Placer
Yolo
El Dorado
Napa
Solano
Amador
Alpine
Sacramento
Calaveras
San Francisco
San Joaquin
Tuolumne
San Mateo
Stanislaus
Mono
Santa Clara
Mariposa
Santa Cruz
Merced
Madera
San Benito
Fresno
Monterey
Kings
Tulare
Inyo
San Luis Obispo
Kern
Santa Barbara
San Bernardino
Ventura
Los Angeles
Orange
Riverside
San Diego
Imperial